

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

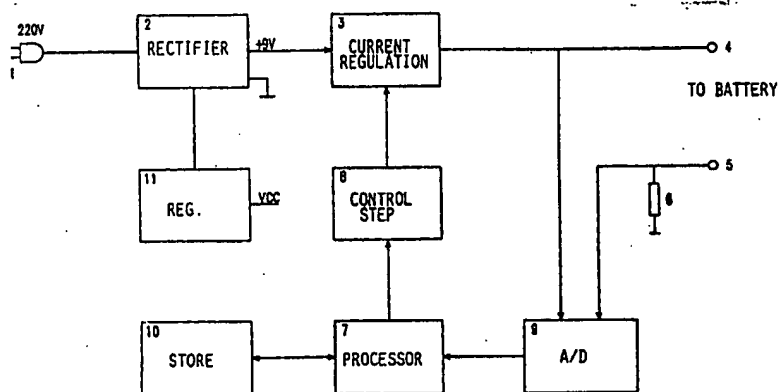
**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>5</sup> :  H02J 7/04, G01R 31/36	A1	(11) International Publication Number: <b>WO 94/05068</b>  (43) International Publication Date: 3 March 1994 (03.03.94)
(21) International Application Number: PCT/DK93/00267 (22) International Filing Date: 16 August 1993 (16.08.93) (30) Priority data: 1016/92                      14 August 1992 (14.08.92)      DK (71) Applicant (for all designated States except US): CHARTEC LABORATORIES A/S [DK/DK]; Christiansholmsvej 32, DK-2930 Klampenborg (DK). (72) Inventors; and (75) Inventors/Applicants (for US only) : REIPUR, John [DK/ DK]; Fabritius Allé 17, DK-2930 Klampenborg (DK). JUUL-HANSEN, Ebbe [DK/DK]; Ganløseparken 31, DK-3660 Stenløse (DK).		(74) Agent: PLOUGMANN & VINGTOFT A/S; Sankt Annæ Plads 11, P.O. Box 3007, DK-1021 Copenhagen K (DK). (81) Designated States: AU, BB, BG, BR, BY, CA, CZ, FI, HU, JP, KP, KR, KZ, LK, MG, MN, MW, NO, NZ, PL, RO, RU, SD, SK, UA, US, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With international search report.

## (54) Title: METHOD AND APPARATUS FOR BATTERY CHARGING



## (57) Abstract

A rechargeable battery is charged by connecting the terminals of the battery to an electrical power source. In order to avoid overcharging and undue temperature increase in the battery cell, the course of at least one charging parameter is surveyed during at least part of the process of charging the battery. This charging parameter surveyed is compared with a number of reference parameter courses representing idealistic or desirable processes of charging the battery for different starting states of the battery. In order to determine the starting state of the battery and thus selecting a reference parameter course, the battery may initially be test charged for a short period of time and subsequently test discharged for another short period of time. The comparisons may for example be made by means of a microprocessor, which may also select the reference course. Thereafter the process of charging the battery may be controlled so as to approximate the course of said charging parameter to the selected reference course. The invention also relates to a method of determining characteristic parameters of the battery which may be used to control a subsequent charging process. Such characteristic parameters may be the capacity of the battery, the maximum charging temperature and the maximum charging voltage. The invention further relates to a battery and a battery system wherein the battery may comprise information means for storing battery information. Such information means may for example be an electronic memory or a microprocessor.